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THE IMPACT OF INCREASING FUEL COSTS ON FUTURE OUTDOOR RECREATION PARTICIPATION[1]

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ABSTRACT

A study was conducted in a community located in the rural fringe of a major metropolitan area of central Ohio during the winter and spring of 1980 to assess the potential impact of increasing fuel costs on future outdoor recreation participation. A sample of 303 adult residents was drawn from the study community using a systematic sampling technique. The sample represents over 50 percent of all families in the study area and is not biased by sampling error since 95 percent of the people selected for inclusion in the study actually participated. The findings revealed a tendency among the respondents to reduce future outdoor recreation participation if fuel prices continue to increase. Regression and multiple correlational analyses revealed that socioeconomic and demographic factors are not predictive of perceived future changes in outdoor recreation participation. The findings are discussed in the context of applied development programs.

THE IMPACT OF INCREASING FUEL COSTS ON FUTURE OUTDOOR RECREATION PARTICIPATION

INTRODUCTION

The purpose of this paper is to present the findings of a study to assess the potential impact of increasing fuel costs on future outdoor recreation participation. Rising fuel costs are major contributors to the inflationary spiral experienced in recent years in the U.S., which has had a very significant impact upon consumption patterns. Inflation has adversely affected discretionary income for many family units which has necessitated reassessment of existing behavioral patterns to reduce unnecessary spending. Nonessential activities, such as leisure travel and other types of recreation spending, have been subject to careful evaluation and in some instances severe reduction due to the erosion of "real income." It is highly likely that continued inflation will require further reduction in family spending and a "retrenchment" in terms of nonessential activities. It is also likely that certain types of recreational activities will be curtailed or significantly modified to accommodate the new economic environment.

Researchers and resource planners interested in outdoor recreation participation should pay careful attention to the potential impact of inflation on recreation behavior because many outdoor recreation activities require extensive travel, special equipment, extensive fuel consumption, and other costly goods and services which may not be accessible to a broad spectrum of people given the erosion of lifestyles

during periods of rapid inflation. The implications for resource developers is that inflation may result in sharp decreases in the demand for certain types of outdoor recreation experiences and an increase in demand for others. It is also likely that future users of certain facilities will be quite different from previous users in terms of socio-demographic characteristics, which implies that different client groups will be making demands upon resource planners for certain types of facilities.

This paper addresses several of these issues. A summary of the state-of-the-art in the area of outdoor recreation participation and fuel costs is provided. Hypotheses are developed, put to empirical test, and conclusions drawn. The findings are discussed in the context of outdoor recreation development programs.

LITERATURE REVIEW

Recent discussions concerning the impact of inflationary trends on recreation behavior (U.S. News and World Report, 1980: 49; O'Leary and Yu, 1979; Van Doren, 1980; Wagner and Donohue, 1976) suggest that increasing constraints placed upon family income will result in significant modification of leisure behavior patterns. The general consensus is that some types of recreation participation will be reduced even though people will continue to participate in some form of recreational activity. The frequency, duration, location, and nature of the recreation activity are the principle factors predicted to change.

Of particular interest to the authors of this paper is the research

information regarding the impact of inflation and increasing fuel costs on recreation participation and leisure travel. While an extensive literature exists in the area of recreation travel (Thompson, 1979; Van Doren, 1965; Volk, 1965) relatively little has been published to date concerning the potential impact of increasing fuel costs on outdoor recreation participation. A recent U.S. News and World Report article (1980) asserts that leisure behavior will be significantly affected by inflation and that long-distance vacation trips are things of the past. It is further argued that more emphasis in the future will be placed upon use of regional recreational facilities and that more leisure activities will take place in the home. The explanation given for these predictions is that when discretionary income is reduced during periods of inflation people must choose carefully how they will use their limited economic resources. Both essential and nonessential goods and services must be procured with greater cost efficiency and in some instances nonessentials must be foregone. This line of reasoning suggests that essentials to maintain the family unit, such as food, shelter, clothing and energy to satisfy essential needs, will be secured while some of the nonessentials will be sacrificed. Long-distance trips to participate in outdoor recreation activity, for example, would be defined as a nonessential activity and be subject to careful review and possible elimination. Subsequently, long-distance trips for recreation purposes should become much more infrequent for certain segments of the population as fuel costs continue to rise and inflation erodes lifestyles. Thus, demand for recreational experiences which can only be

satisfied long distances from place of residence will decline, if people do not have substitutes closer to their homes.

Van Doren (1980) articulates this line of reasoning quite well in a paper presented at the 1980 National Outdoor Recreation Trends Symposium and terms the orientation a "retrenchment perspective." In this paper Van Doren asserts that leisure, recreation, and travel have been defined as a "right" rather than a privilege within the United States and notes that economic reality has required modification of many recreational activities. He further suggests that localistic recreational attractions will probably be used more frequently and that home-centered leisure pursuits will become much more popular. These assertions are quite consistent with the position presented above since participation at local facilities would be less costly.

Research by Wagner and Donohue (1976) and O'Leary and Yu (1979) basically support several of the issues addressed by Van Doren. These authors observe that recreation behavior is affected by inflation and will be greatly influenced in the future by rapid increases in gasoline prices. Both of these studies support the assertion by Van Doren that socio-demographic factors are important determinants of the potential impacts of inflationary trends on recreation behavior.

The existing literature suggests that inflation does affect recreation participation. As discretionary income is reduced there should be a concomitant reduction in recreation participation as people use larger portions of their incomes for the necessities. With smaller resource bases and increasing fuel costs, people should modify their

recreation travel behavior and outdoor recreation participation patterns to reflect the new demands upon their discretionary incomes. This suggests that many people will tend to participate less frequently in outdoor recreation activities as fuel costs increase during inflationary periods. This hypothesis is only valid if there are no local recreation activities which can be substituted (Hendee and Burdge, 1974) for the activities foregone and the substituted activities are not energy intensive (large motorboats will not be substituted for off-road vehicles). The existing literature also suggests that socio-demographic and situational factors will be predictive of the impact of increasing fuel costs upon outdoor recreation participation. The factors identified as potentially useful predictive variables are: age, income, place of residence, leisure orientation, family size, occupation, and education (Wagner and Donohue, 1976; O'Leary and Yu, 1979; Van Doren, 1980; U.S. News and World Report, 1980). These characteristics were selected for investigation and are discussed in the methodology section below.

METHODOLOGY

Study Group

To assess the merits of the research expectations noted above, a research study was conducted in the late winter and early spring of 1980 among the residents of a community located on the fringe of a major metropolitan area of central Ohio. Most of the residents of the study area who are not engaged in production agriculture commute each day to work in nearby urban areas. Nearly all of the residents' service needs

and purchased goods are secured from large commercial-retail centers located in adjacent urban communities. Other than a small gasoline-grocery store, a grain elevator, several small bait stores, and a boat dealership, the study area is totally lacking in nonfarm employment opportunities and shopping facilities.

Many farms, specializing in mixed grain and animal production, are still operating within the study area, but these are rapidly disappearing as a result of significant land use changes which occurred during the early 1970's. The federal government secured large tracts of land for construction of a major water impoundment project, which was completed in 1974. Since then, agricultural land has been developed for residential and recreational housing. Although the land is excellent for farming, expanded demands for building sites and speculation has elevated land prices to the point that farmers are now selling their properties and moving their farming operations. Should this ecological process continue, the study area will become quite densely populated within the next ten years.

The study group is composed of approximately 600 families[2] who live in a dispersed pattern around the lake. The population has grown slightly in recent years, but most of the people are long-term residents of the community. Prior to the 1970's, the size of the population was quite stable, with most farmers owning and operating farms which had been in their respective families for generations.

The descriptions of the study area and group have been presented to give the reader a "feel" for the community situation, which is quite

similar to those of many metropolitan-fringe community groups in Ohio. It also serves to demonstrate that outdoor recreation opportunities are easily accessible to the study population within the community. Upland game hunting, wildlife observation, and fishing-boating opportunities abound in the area. There are also several locations for picnicking, walking and biking.

Sampling Technique

A systematic random sampling technique adapted for use in rural areas (Blalock, 1960; Napier, 1971) was used to draw a sample of 303 adult residents from the study area. This sample represents over 50 percent of all families in the study community. An adult member from every other house in the study area was asked to participate in the study. Only 15 people refused to participate which constitutes a response rate of 95 percent.

A drop-off-pick-up-later technique was used to collect the data. Field staff contacted the potential respondents and solicited participation. A structured questionnaire was explained and left with the study participant, who completed the questionnaire at his/her leisure. The field agent returned at a designated time to pick-up the questionnaire and give the respondents the opportunity to ask questions or make comments.

Instrument Construction

The impact of increasing fuel costs upon future outdoor recreation was measured by asking the respondents to respond to the statement "If

fuel prices continue to increase, what effect will they have upon your outdoor recreation activity?". The possible responses were aligned along a continuum from "greatly reduce," to "greatly increase." "No change" was designated as the center of the continuum. The possible responses were weighted 1 through 11, with the higher values indicating increased activity. These data were designated as the dependent variable for analysis purposes.

The independent variables selected to predict future outdoor recreation participation under conditions of increasing fuel costs were derived primarily from the literature. They are: age, education, number of children, place of early socialization, length of residence, outdoor recreation participation, farming status, and income. The variables were measured as follows:

Age was measured as age of the respondent at last birthdate;

Education was measured as the number of years of formal education completed by the respondent;

Number of children was measured as the number of children living at home at the time of the study;

Place of early socialization was measured by asking the respondent to select the type of area in which he/she spent the first 15 years of life. The possible responses were: rural farm, rural nonfarm, small town (less than 2,500 population), town (2,500 to 10,000 people), and city (10,000 or more people). The responses were weighted 1 through 5, with rural farm designated as 1 and city as 5;

Length of residence was measured as the number of years the respondent had lived in the community;

Outdoor recreation participation was measured as the number of times in the last year the family had participated in outdoor recreation activities other than on their own property. There were 7 categories of responses: 0, 1-5, 5-10, 10-15, 15-20, 20-25, and over 25 times. The categories were weighted 1 through 7, with 0 receiving a value of 1 and more than 25 receiving a value of 7;

Farming status was treated as a dummy variable with farmers receiving a value of 1 and nonfarmers a value of 2;

Income was measured by twenty-two $1,000 categories which ranged from 0-$999 to $25,000 or more. The categories were weighted 1 through 22, with the higher values indicating higher income.

Statistical Analysis

Linear relationships were assumed to exist among the variables, and the data were also assumed to be metric measures (Labovitz, 1970; Kim, 1975), which permitted the use of parametric statistics. Multiple-correlation and step-wise regression analyses were used to examine the data.

FINDINGS

The descriptive findings for the dependent variable revealed that the grand mean was 4.6, which represented a slight reduction in expected outdoor recreation participation along the continuum. A value of 6 indicated no change, and values less than 6 indicated reduction in expected participation. This indicates that the respondents expect to reduce outdoor recreation activities if fuel costs continue to increase.

The correlation findings, presented in Table 1, show that two variables are significantly correlated with anticipated outdoor recreation participation at the .05 level. The factors are "number of children" and "length of residence in the community."

As the number of children living at home increased, so did the anticipated outdoor recreation participation even if fuel costs continue to increase. As length of residence increased, however, there was a

slight tendency for anticipated participation in outdoor recreation to decline under conditions of increasing fuel costs. While these correlations are significant at the .05 level, they are quite small and, therefore, have little substantive meaning. The other independent variables were not significantly related to the dependent variable at the .05 level.

(Table 1 Here)

Future outdoor recreation participation was regressed against the independent variables in a step-wise fashion and one variable was shown to explain all of the variance in anticipated participation that can be explained by the variables included in the analysis. The variable shown to be significant is number of children living at home but the amount of explained variance (R^2) is only 0.01. The regression equation is presented in standardized regression coefficient form (Beta):

$$y = 0.117\ X_1 + .995\ e$$

where:

y = future outdoor recreation participation under conditions of increasing fuel costs

X_1 = number of children living at home

e = residual error.

SUMMARY AND CONCLUSIONS

The study findings indicate that the respondents perceived their future outdoor recreation participation would slightly decline if fuel costs continue to rise. This finding is quite consistent with the

research expectations since discretionary income tends to be reduced under inflationary conditions and rising fuel costs. Subsequently, outdoor leisure activities which require the consumption of fuel would be expected to be reduced. While members of the study group were expected to reduce their outdoor recreation participation, assuming continued increases in fuel costs, it is interesting to note that the study respondents expected to reduce their participation even though they were located adjacent to a major water-based recreation area. Assuming the availability of the recreation area had a mitigating effect of easing the magnitude of the anticipated reduction in outdoor recreation participation, it is logical to hypothesize that people located greater distances from recreation sites would anticipate even greater reduction in outdoor recreation participation. This suggests that participation at public outdoor recreation facilities located in areas considerable distance from urban centers will be significantly reduced.

The multiple-correlation and regression findings indicate that the independent variables selected for investigation were poor predictors of future outdoor recreation participation under conditions of rising fuel costs. While two factors were shown to be significantly correlated with anticipated participation at the .05 level (number of children and length of residence), the strength of association was extremely low. The other independent variables were not significantly related to the dependent variable. This means that the variability in the dependent variable could <u>not</u> be explained by the factors chosen for study and discussed in the existing literature. The findings suggest that future

changes in outdoor recreation participation will be experienced by all socio-economic classes of people with different socio-demographic characteristics. While it was anticipated that lower socio-economic groups would be effectively excluded from outdoor recreation participation due to increasing fuel costs, the data do not support that position. People from many types of socio-cultural and class backgrounds will probably reduce their outdoor recreation participation if fuel prices continue to increase.

The study findings suggest that outdoor recreation participation will tend to decrease in the future as fuel costs increase. Agencies commissioned to provide public recreation facilities must take this finding into consideration when developing future recreation facilities. Planners must become aware that a shift in demand from distant recreational experiences to more localistic attractions may drastically increase local demand while significantly reducing the need for recreational facilities located in remote areas to which people will not (or cannot) travel.

FUTURE RESEARCH NEEDS IN THE AREA OF FUEL COSTS AND OUTDOOR RECREATION PARTICIPATION

The type of research reported in this paper should be replicated to ascertain the generalizability of the findings. Until this is accomplished, the conclusions drawn from this study should be considered tentative. The initial findings, however, have tremendous implications for future outdoor recreation planning which must not be ignored by

researchers or facility developers. The scope of future research should also be enlarged to encompass other variables and issues not addressed in the study reported here.

The study findings answered several specific research questions about the potential impact of increasing fuel costs on outdoor recreation participation but the research process[3] unveiled numerous other research questions which should be addressed by social scientists. The findings demonstrated that future outdoor recreation participation will probably decline as fuel costs increase but little insight was gained relative to the explanatory factors associated with change in outdoor recreation participation. No attention was given to the probable location, duration and type (nature) of outdoor recreation participation. These are critical issues for facility planning and should be researched.

Based on the study findings that outdoor recreation will be reduced even when a local facility is available, it is quite possible that future participation may be greatly reduced for people who do not have access to certain types of outdoor recreation facilities close-by. Should research demonstrate a major shift in the location of outdoor recreation participation, agencies will have to redirect their planning efforts to provide more varied outdoor recreation experiences near large urban centers.

Another factor of significant importance is the duration of outdoor recreation participation when it does occur. If research should show that people will reduce the frequency of participation but stay for

longer periods of time when they do participate, changes will be required in many facilities. For example, recreation areas designed for day-use or short camping trips will not satisfy the needs of the long-term user.

The type of anticipated outdoor recreation activity is another important research area. Outdoor recreation activities which were substitutable when energy was plentiful and cheap may not (probably not) be appropriate substitutes under conditions of energy scarcity. Water-based recreation areas that are designed for power boating and skiing may experience significant reduction in use by such recreators due to energy costs but more use by sail boaters and small outboard recreators. While people who own a large power boat may not sell their craft, they will probably use it much less frequently.

Energy scarcity (exhibited by rapidly increasing prices) has introduced many changes into our lifestyles and outdoor recreation participation is no exception. In fact, such activities may be subject to very significant change due to the "nonessential" nature of recreational activities while the energy crisis has been shown to be "real" and probably long-lasting, outdoor recreation researchers, practitioners, and facility decision makers have not paid much attention to this issue. We can no longer ignore the problem because we may soon discover that the recreating publics have changed their recreating behavior to the point that much of our previous planning data and assumptions are inconsistent with "reality."

FOOTNOTES

[1]Funding for this study was provided via the Hatch 645 Project of the Ohio Agricultural Research and Development Center, Wooster, Ohio.

[2]The population estimates were made at the time of the study via enumeration of occupied residences.

[3]The research process refers to the problem definition, literature review, development of the conceptual model, data collection, analyses, and conclusions.

TABLE 1: Correlates of Future Involvement In Outdoor Recreation Participation Under Conditions of Increasing Fuel Costs (N=303)

	Age	Education	Number of Children	Early Socialization	Length of Residence	Outdoor Recreation Participation	Farming Status	Income	Future Outdoor Recreation Participation
Age	1.00								
Education	-0.096	1.00							
Number of Children	-0.436*	0.044	1.00						
Early Socialization	-0.207*	0.139*	0.119*	1.00					
Length of Residence	0.611*	-0.095	-0.273*	-0.391*	1.00				
Outdoor Recreation Participation	-0.268*	0.169*	0.179*	0.144*	-0.193*	1.00			
Farming Status	-0.127*	-0.017	0.070	0.231*	-0.343*	0.039	1.00		
Income	-0.304*	0.263*	0.268*	0.187*	-0.208*	0.225*	0.113*	1.00	
Future Outdoor Recreation Participation	-0.110	0.055	0.117*	0.038	-0.113*	-0.047	0.003	0.063	1.00

*Significant at the .05 level.

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